

Appl.No.: 10/685,767
Reply to Office Action of January 24, 2006
Page 2

In the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) An expandable intervertebral implant, the implant comprising:
 - a) an external member and an internal member; and
 - b) an interlocking teeth structure formed on each of the external and internal members along which the external member and the internal member are adjustably engaged, the interlocking teeth structure arranged to permit expansion of the intervertebral implant along a direction of expansion, wherein:

the internal member includes an internal base wall, first and second internal walls that extend from the internal base wall along a length of the base wall, wherein the first and second internal walls each have a free end and an attached end, the attached end connected to the base wall and the free end extending from the base wall in a generally perpendicular orientation;

a flexible region in the internal member defined by a pair of slots formed adjacent to the attached ends of the first and second internal walls and extending along the length of the internal member base wall, wherein the flexible region provides for lateral displacement of the free ends of the first and second internal walls;

~~the internal member includes a flexible region extending along a length of the internal member permitting flexure of the interlocking teeth structure;~~

the interlocking teeth structures formed on the external and internal members include external and internal engagement surfaces configured to

Appl.No.: 10/685,767
Reply to Office Action of January 24, 2006
Page 3

engage one another to lock the implant in an expanded configuration against a compressive force applied to the internal and external members along a direction opposite the direction of expansion; and

the external and internal engagement surfaces are arranged in a non-perpendicular orientation relative to the direction of implant expansion.

2. (Currently Amended) An expandable intervertebral implant, the implant comprising:

- a) an external member and an internal member, each of the members including a base and at least a first wall extending from the base along a length from a first end to a second end of the external and internal members; and
- b) an interlocking teeth structure formed on the first walls of each of the external and internal members, the interlocking teeth structures arranged to permit engagement of the external and internal members with each other along their respective first walls and permit expansion of the intervertebral implant along a direction of expansion;

the interlocking teeth structure formed on the external member having an engagement surface that engages an engagement surface of the interlocking teeth structure formed on the internal member to lock the implant in an expanded configuration against a compressive force applied to the internal and external members along a direction opposite the direction of expansion; and

the engagement surfaces of the interlocking teeth structures being arranged in a non-perpendicular orientation relative to the first walls of the external and internal members;

wherein the external member is a rigid construction configured to prevent flexure of the first wall of the external member; and

Appl.No.: 10/685,767
Reply to Office Action of January 24, 2006
Page 4

wherein the internal member includes an arcuate slot positioned adjacent to an attached end of the first wall and extending from the first end to the second end of the internal member to form a flexible region within the internal member permitting flexure of the first wall a free end of the first and second walls of the internal member with respect to the base of the internal member.

3. (Original) The implant of claim 2, wherein the engagement surfaces of the interlocking teeth structure formed on the external member are raked upwardly about 4 degrees.

4. (Original) The implant of claim 3, wherein the engagement surfaces of the interlocking teeth structure formed on the internal member are raked downwardly about 4 degrees.

5. (Original) The implant of claim 2, wherein each of the engagement surfaces of the interlocking teeth structure formed on the internal and external members is angled approximately 94 degrees relative to the respective first wall.

6. (Original) The implant of claim 2, wherein the first walls of the external and internal members have an inside wall surface and an outside wall surface, the interlocking teeth structure being formed only on the inside wall surface of the external member, and only on the outside wall surface of the internal member.

7. (Previously presented) The implant of claim 2, wherein the first wall of the internal member is positioned within the first wall of the external member, wherein the flexible region allows the interlocking teeth structure formed on the first wall of the internal member to flex toward the first wall of the external member.

8. (Canceled)

9. (Previously presented) The implant of claim 2, wherein the first wall of the internal member positioned within the first wall of the external member, wherein the flexible region allows the interlocking teeth structure formed on the first wall of the internal member to

Appl.No.: 10/685,767
Reply to Office Action of January 24, 2006
Page 5

flex away from the first wall of the external member during expansion of the intervertebral implant.

10. (Canceled)

11. (Previously presented) The implant of claim 2, wherein the first wall of the external member has an external wall thickness, the external wall thickness being greater than an internal wall thickness of the internal member, wherein the external wall thickness of the external member prevents flexure of the first external wall.

12. (Currently Amended) An expandable intervertebral implant, the implant comprising:

a) an external member including:

i) a external base wall, and first and second external walls extending from the external base wall, the first and second external walls having a thickness to resist lateral displacement;

b) an internal member coupled to the external member including:

i) an internal base wall, and first and second internal walls extending from the internal base wall along a length of the base wall; wherein the first and second internal walls each have a free end and an attached end, the attached end connected to the internal base wall and the free end extending from the base wall in a generally perpendicular orientation

ii) a flexible region in the internal member defined by a pair of slots formed adjacent to the attached ends of the first and second internal walls and extending along the length of the internal member base wall, wherein the flexible region provides for lateral displacement of the free ends of the first and second internal walls

~~a pair of slots extending along the length of the internal member, the slots defining a flexible region in the internal member positioned adjacent the slots and between the internal base wall and each of the first and second~~

Appl.No.: 10/685,767
Reply to Office Action of January 24, 2006
Page 6

~~internal walls to permit lateral displacement of the first and second
internal walls; and~~

wherein the internal member is positioned with respect to the external member so that the first and second internal walls are engaged with and positioned within the first and second external walls;

c) a locking arrangement configured to lock the implant in an expanded position, the locking arrangement including:

- i) a first configuration of teeth formed on each of the first and second external walls, the first configuration of teeth being raked in an upwardly direction; and
- ii) a second configuration of teeth formed on each of the first and second internal walls, the second configuration of teeth being raked in a downwardly direction;

wherein the first and second configurations of teeth deflect the internal walls of the internal member about the flexible region toward the external walls of the external member when compressive forces are applied to the base walls of the external and internal members.

13. (Original) The implant of claim 12, wherein each of the upwardly and downwardly raked configuration of teeth of the external and internal members have a rake angle of between 1 degree and 8 degrees relative to the first and second walls of the external and internal members.

14. (Original) The implant of claim 12, wherein the first upwardly raked configuration of teeth are angled approximately 4 degrees relative to the first and second external walls of the external member.

Appl.No.: 10/685,767
Reply to Office Action of January 24, 2006
Page 7

15. (Original) The implant of claim 12, wherein the second downwardly raked configuration of teeth are angled approximately 4 degrees relative to the first and second internal walls of the internal member.

16. (Canceled)

17. (Currently Amended) An expandable intervertebral implant, the implant comprising:

- a) a first member having a first base portion and walls extending from the first base portion;
- b) a second member having a second base portion, walls extending from the second base portion along a length of the second member base wall, and arcuate slots positioned adjacent the walls extending along the length of the second member, the arcuate slots defining a flexible region between each of the walls and the second base portion;
- c) an interlocking structure formed on each of the first and second members, the interlocking structure being configured to secure the implant in an expanded configuration;

wherein the walls of the second member flex toward the walls of the first member when compressive forces are applied to the base portions of the first and second members.

18. (Original) The implant of claim 17, wherein the interlocking structure include ratchet teeth configured to permit linear expansion from a non-expanded configuration to the expanded configuration.

19. (Original) The implant of claim 18, wherein only the walls of the second member are configured to ratchet during expansion, and only the walls of the second member are configured to flex when compressive forces are applied to the base portions of the first and second members.

20. (Canceled)

Appl.No.: 10/685,767
Reply to Office Action of January 24, 2006
Page 8

21. (Previously presented) The implant of claim 1, wherein the internal member further comprises an end portion distal to the external member having an arcuate portion.
22. (Previously presented) The implant of claim 21, wherein the internal member further comprises a shoulder portion having a surface generally perpendicular to the direction of expansion and recessed relative to at least part of the arcuate portion in the direction of expansion.
23. (Previously presented) The implant of claim 22, wherein at least a portion of the arcuate portion and at least a portion of the shoulder portion define an arcuate gap therebetween.
24. (Previously presented) The implant of claim 23, wherein the gap extends along a length of the shoulder to form the flexible region.
25. (Previously presented) The implant of claim 22, wherein the internal member further comprises an additional shoulder portion having a surface generally perpendicular to the direction of expansion and recessed relative to at least part of the arcuate portion in the direction of expansion, the two shoulder portions disposed on opposite sides of the arcuate portion when viewed in the direction of expansion.